Frequently asked questions about The Parlier Air Monitoring Project

January 2006

WHAT IS THE DEPARTMENT OF PESTICIDE REGULATION PROJECT IN PARLIER?

The Department of Pesticide Regulation (DPR) environmental justice project in the Fresno County community of Parlier has several parts. The major element is analyzing ambient air for traces of pesticides, and to begin developing solutions for possible problems we may find. ("Ambient" air is the air at a particular time and place outside structures — outdoor air that we breathe.)

Another part of the project is working with growers to find better ways to manage their pest problems with less risk to workers and residents. This is part of our exploration of what is called a "precautionary approach," which means looking for less-toxic ways of doing things even without indication that the current methods are doing harm.

WHY IS DPR DOING AN ENVIRONMENTAL JUSTICE PROJECT?

DPR's project is one of six environmental justice projects being done by boards and departments in the California Environmental Protection Agency.

The Parlier project is one of six environmental justice pilot projects being done by boards and departments that are part of the California Environmental Protection Agency (Cal/EPA).

The pilot projects are different from one another, and are being done around the State. DPR's assignment was to look at pesticide use in a Central Valley town and determine if there was a health concern, especially for children. Analyzing pesticides in air helps us to understand how pesticides get into air, how much is there, and whether the levels are a risk to people. If there is, we look at ways to reduce the risk.

Our goal in Parlier is to answer these questions:

- Are residents exposed to pesticides in the air?
- Which pesticides are people exposed to? In what amounts?
- Are the amounts of pesticides found in air of concern to human health, particularly for children?

Continued on page 2

(continued from page 1)

We also want to:

- Tell the community about the project. We plan two community forums to do this, one when the project starts, and another after it is over and we have evaluated the results.
- Evaluate pesticide risk compared with other pollutants that are monitored.
- Reduce pesticide risk.
- Follow up on what we find. For example, we might provide education and technical support to farmers to encourage them to use alternatives that are less toxic or, if we have health concerns, we can put stricter controls on certain problematic uses.

How long will the project last?

We began in early 2005, deciding the project we wanted to do and evaluating potential locations. Throughout 2005, we worked out details of the project with input from a local advisory group. From January to December 2006, we will take samples, send them to a laboratory for analysis, and evaluate the results.

As the project continues, DPR will release information about what our scientists have found. We plan to release these reports in April and October 2006, and in April 2007. DPR scientists will complete their final report in fall of 2007.

How is this project different from the usual studies that DPR does?

One difference is that public participation is a key part of this project. DPR regularly does air monitoring studies throughout the State. Typically, when we do these studies, we work with local officials and others to set up monitoring equipment, but we don't get advice from the public on the study goals and what pesticides we should monitor.

For the Parlier project, we created a Local Advisory Group (LAG), which meets periodically to give us their ideas and opinions on how the project should be conducted.

We are also having two open houses in Parlier where our scientists and technical experts can answer questions the community may have about what we are doing, and what it means for Parlier.

Another difference is that we will release periodic reports about our findings during the project. (When we do air monitoring, we usually do not release the results until the project is over and we have finished a complete evaluation of the results.)

We often get informal advice from scientists outside DPR on our projects. However, for the Parlier project, we put together a technical advisory group comprised mainly of scientists and technical experts from other government agencies and universities. This group meets about once a month to provide outside scientific review of the methods and approach we are using for the project.

What other air sampling has DPR done?

DPR has done many air monitoring projects throughout the State, often focusing on specific pesticides (for example, sampling methyl bromide after application). However, we have not done many projects like Parlier that are long-term and that target a large number of pesticides.

In 2000, DPR conducted a community-based project in the Santa Barbara County town of Lompoc. There we sampled at several sites for part of the year.

(Continued on page 3)

The air monitoring project will last a year, through December 2006. Reports will be issued throughout the project, with a final report in the fall of 2007.

(Continued from page 2)

One of the obstacles then was that few methods existed to take a single sample of air and analyze it for many pesticides at once. Instead, you had to take a sample for each pesticide, and analyze each separately. To address this, DPR worked with the University of California to develop an efficient method to do multi-pesticide analysis of air samples.

In Lompoc, DPR monitored outdoor air for 31 pesticides and breakdown products. DPR detected 27 of them in one or more of the 451 samples collected and analyzed. while many pesticides were detected, and some were detected often, air concentrations were low compared with health screening levels.

Since the Lompoc project, we have improved the multi-pesticide method and will be using the latest version for the Parlier project.

Why did DPR select Parlier for this project?

DPR evaluated 83 communities in Fresno, Kern, Kings, Madera, Merced, Stanislaus and Tulare counties.

DPR ranked the communities based on environmental justice data (for example, low income, number of non-Caucasian families, number of children), whether there was data available or being collected on other pollutants in air, water and soil, and the amount of pesticide use (both close to Parlier and for five miles around).

DPR also considered other factors, such as good places to set up monitoring equipment, weather patterns, and whether it was possible to collaborate with other projects focused on environmental health.

Based on this analysis, DPR selected Parlier.

How many pesticides will the project look for?

About 40. DPR will monitor for as many as 26 pesticides and 5 breakdown products.

In addition, the State Air Resources Board (ARB) will monitor for many substances in air, including nine pesticides.

(A *breakdown product* is the result of a chemical breaking apart into smaller pieces. Some kinds of pesticides break down when exposed to the sun or rain, or to bacteria found in soil. The breakdown is a natural process that may produce a compound that is more toxic or less toxic than the original chemical.)

How did DPR select the pesticides for monitoring?

DPR put together a list of pesticides that could be monitored, and ranked them based on:

- How toxic they are.
- How volatile they are, that is, how easily they get into air.
- Amount of use. The more they were used, both in the Parlier area and statewide, the more likely they were to be included.
- Whether there were methods to collect them from the air, and analyze them in the laboratory.
- Whether they could be included in a multi-pesticide method. (Some pesticides are chemically related to others, so they are easier to include. Some have a chemical structure so different from the others that they cannot be included in the multi-pesticide method.)

After getting input from the Local Advisory Group and our technical advisers on their preferences, DPR selected

(Continued on page 4)

The project will look for about 40 pesticides and pesticide breakdown products in the air, and examine potential health effects of detections.

(Continued from page 3)

29 pesticides and breakdown products for monitoring using the multi-pesticide method.

The project budget allowed sampling and testing for one extra pesticide that could not be detected on the multi-pesticide screen. With input from the Local Advisory Group, we chose the fumigant metam-sodium. Because metam-sodium breaks down almost immediately to MITC, the analysis will be done for this breakdown product.

In addition, the ARB will monitor for many toxic air pollutants and metals, including nine pesticides.

Where will DPR collect the samples?

When DPR does this kind of project — monitoring ambient air in a community — we typically set up our sampling equipment on the roofs of schools or other public buildings near agricultural fields. Locating the equipment at Parlier schools takes on a special significance since the focus of all the Cal/EPA pilot projects is to reduce risk to children.

There are several advantages to locating equipment on the roofs of schools and public buildings. The equipment needs to be accessible to our staff, yet safe from loss or tampering. We want the equipment to be both close to populated areas and near agricultural pesticide applications. In a town, the highest levels of pesticides can be expected where the community borders on agricultural fields. Monitoring at these points gives us data on the highest potential pesticide levels. We can use this information to calculate what the levels would be further from the application sites.

In Parlier, DPR will place its equipment at Martinez School, Chavez School and Benavidez School. The ARB will set up its monitoring trailer at Benavidez School.

In addition to air samples, DPR will collect ground water samples from the five municipal wells that supply drinking water for the city of Parlier. The samples will be collected once or twice during the 52-week monitoring study. They will be analyzed for 12 pesticides and breakdown products that have been found in groundwater elsewhere in California.

The San Joaquin Valley Air Pollution Control District also has a monitoring station at the Kearney Agricultural Center just outside Parlier. It regularly samples for hydrocarbons, aldehyde, and criteria air pollutants.

(*Criteria air pollutants* are a group of common air pollutants regulated based on certain criteria, such as information on health or environmental effects. Based on the health and environmental impacts of these pollutants, State and federal air quality agencies have established safety thresholds and air quality standards to protect health.)

The district's work is unrelated to DPR's monitoring project, although DPR will incorporate the data into its analysis to the extent possible.

How often will air samples be taken?

For 52 weeks, DPR will take samples at each location for three days in a row each week. There will be no set schedule for sampling. DPR will vary the three days sampled each week.

The sampling devices collect air continuously for 24 hours. After the first day of sampling, a DPR staff member takes that sample cartridge and replaces it with another one. This is repeated after the second day of sampling.

(Continued on page 5)

When DPR does this kind of project, it typically sets up monitoring equipment on the roofs of schools or other public buildings. For the Parlier project, monitoring will be done at Martinez School, Chavez School and Benavidez School.

Continued from page 4

What role does the Air Resources Board (ARB) have in the project?

The ARB will set up a small trailer at the Benavidez School that will house several instruments. (They are in a trailer because they need to be kept at constant temperature.) Outside air will be drawn into the instruments in the shelter for collection and later analysis at ARB's Sacramento laboratory. ARB will collect samples typical of a monitoring site for air toxics.

ARB's standard monitoring method for gaseous pollutants includes about 30 volatile organic compounds (VOCs). Some or all uses of six VOCs are as pesticides: 1,3-dichloropropene (Telone), methyl bromide, acrolein, carbon disulfide, formaldehyde, and xylene.

(A *volatile organic compound*, is any organic compound that evaporates readily to the atmosphere. VOCs contribute significantly to smog production and certain health problems.)

At its air toxics monitoring sites, ARB also routinely analyzes particulate matter for metals. (Particulates are tiny particles of solid or liquid suspended in the air. Examples include dust, dirt, smoke, soot, and liquid droplets.) This data will give DPR information on metal-based pesticides used near Parlier, such as sulfur and copper.

ARB staff will collect 24-hour air samples every six days during DPR's yearlong project. During months when the use of 1,3-dichloropropene and sulfur is typically the highest in the Parlier area, ARB will collect 24-hour samples every three days. ARB will provide its results to DPR.

The ARB is also providing technical and scientific input on DPR's air sampling work.

How can you be sure the days you monitor are the days that pesticides levels are the highest?

Pesticide levels in the air vary from day to day. This might be because of weather, or where pesticide applications are done in relationship to where the sampling devices are.

However, DPR scientists have experience in comparing monitoring results at different sites with reported daily pesticide use and weather data. They can figure out how the data represents levels on other days.

When will DPR release the monitoring results?

DPR will release interim reports in April and October 2006, and April 2007.

However, the results can't be fully evaluated until we have a year of data to look at, that is, after we finish air monitoring. Then DPR scientists will write a complete analysis and evaluation. This report will be released in October 2007.

How will you know there are problems if you don't evaluate the data as it comes in?

Although a full evaluation can't be done until all the pesticide monitoring data are collected, data will be evaluated as it is collected, to find potential problems.

What will you do with the air monitoring data you collect?

We will evaluate the monitoring results to find out what pesticides people are being exposed to. We will also look at whether the pesticides pose a health

(Continued on page 6)

DPR will take samples at the three Parlier locations, three days in a row each week, following no set schedule.

Most months, ARB staff will collect samples once every six days. When use of 1,3-D and sulfur is highest, ARB will sample once every three days.

(Continued from page 5)

concern (individually or as a group). We will compare the data we collect to health screening levels we develop, and to the monitoring we have done in other areas.

We will also look at how the results compare with pesticide use patterns at the time of monitoring. This helps us figure out ways to reduce pesticide levels in the air. It also helps us decide where else we may wish to monitor in the future, and at what time of year.

Even if pesticide levels in the air are not high enough to prompt us to immediately evaluate the health impacts for a single pesticide, all data we collect will be used in an analysis of cumulative impacts. This kind of analysis is part of all the pilot projects. (*Cumulative impact* means health risk posed by exposure to pollutants from multiple pollution sources. Cal/EPA is developing guidance on how to analyze cumulative impacts.)

The information will also become part of DPR's extensive library of data on pesticides, and may be used later when we do analyses unrelated to this project.

What are "screening levels"?

Screening levels are based on a pesticide's toxicity. DPR scientists start by developing a preliminary exposure level for each pesticide based on tests done on laboratory animals. Then DPR scientists adjust the level using scientifically accepted assumptions designed to protect human health. This is to account for possible differences in sensitivity between animals and people (to be protective, people are assumed to be more sensitive to effects than animals), and between different people (some people are assumed to be more sensitive than others, and children may be especially susceptible).

DPR scientists, working with scientific and technical advisers, use published U.S. Environmental Protection Agency (U.S EPA) risk assessments, completed DPR risk assessments, and other scientific data to develop these screening levels.

The screening levels are not legal health standards – they represent the first step in a risk evaluation. They provide a context for scientists to look at the measured levels of the pesticides monitored in this project.

DPR will develop different screening levels for each pesticide to be monitored, and for each, different levels will be developed according to length of exposure. This is the typical procedure for all potential toxins— health effects may differ when you are exposed for a single day compared with being exposed for a year or longer. Short-term exposure (also called "acute") is considered about a day or two. "Subchronic" exposure is several weeks, or a season of pesticide use. Long-term exposure (also called "chronic") is a year or more, typically for a significant portion of a lifetime.

How sensitive is your sampling equipment? Can you find small amounts of pesticides?

Yes, we can find small amounts, so we can evaluate any health concern. The detection limits are all below the screening levels, meaning we can detect and measure amounts of a pesticide at a level that is less than the screening level for that pesticide.

For example, if the screening level of a pesticide is 10 parts per billion (if you divided a beaker of air into a billion parts, 10 of them would be the pesticide), our equipment would be able to find and measure an even smaller amount.

Detections of pesticides in air will trigger an evaluation of whether the levels present a health concern and, if so, what should be done.

(Continued on page 7)

Continued from page 6

Why do you use screening levels?

There are few if any enforceable human health standards for pesticides in air. That why DPR, working with scientists in other state and federal agencies, developed screening levels to put the results of monitoring into a health-based context.

How are screening levels used?

Air concentrations of pesticides below the screening level suggest a low health risk, but should not automatically be considered "safe."

(At the same time, concentrations above the screening level do not necessarily mean health problems will occur. Screening levels are tools to help DPR decide which detections need further evaluation.

What do you consider if you do further evaluation?

DPR scientific staff will want to answer these and other questions:

- Do the levels of pesticides found present a health concern? If so, what is it? Does it require DPR to take regulatory action right away?
- Are there other circumstances where the pesticides might pose a health concern (for example, with repeated applications in a small area)?
- Would sensitive populations (for example, children or pregnant women) be especially at risk?
- If the levels pose a problem, why did they occur? Is this a unique situation (for example, weather that is typical only to certain areas)? Does it occur only with certain crops or application methods? Or can we expect this to occur whenever and wherever the pesticide is used? (Answering these questions helps us figure out how to deal with the problem.)
- Are there other data available that can help us answer these questions? Or do we need to collect more data to figure out how widespread the problem is, when it occurs, and what pesticide uses are contributing to it?

The answers to these questions will raise other issues that may need to be looked into.

What actions will DPR take based on the results?

If our analysis shows a significant health concern with a pesticide under normal use, our response may take various forms. For example, working with the County Agricultural Commissioners, we could require certain use practices for the most highly restricted pesticides. Another alternative might be for the commissioner could require a buffer zone to protect houses, schools, or other sensitive places. (A buffer zone is a strip of a specified width around a pesticide application. In the buffer zone, the pesticide may not be used.)

DPR can require pesticide makers to do studies and send us data to help us better define problems and solutions. We can put controls on use into place with statewide rules.

DPR can also work with the pesticide maker and the U.S. EPA to improve the pesticide product label, changing application instructions and controls on how a pesticide is used.

Whatever measures DPR may take will be based on scientific evaluation and recommendations.

If we decide that none of these approaches will solve the problem, we can

(Continued on page 8)

DPR is studying pest management practices in the Parlier area to help identify lower-risk alternatives for managing pests. DPR is committed to exploring outreach efforts to ensure that farmers are aware of these alternatives and how to use them.

(Continued from page 7)

cancel a product's registration so it can no longer be sold or used in California.

Even if we don't find any problems, we can encourage farmers to use pest management methods that are less toxic. For example, we can work with the University of California Cooperative Extension and others on education for growers about pest management alternatives.

DPR is studying pest management practices in the Parlier area to help identify lower-risk alternatives for managing pests. We will study cropping patterns, pest pressures, pest control practices, pesticide use, application methods, and alternative pest management techniques, with a focus on least-toxic approaches.

We are committed to exploring outreach efforts to ensure that farmers are aware of these alternatives and how to use them.

What about the effects of exposure to multiple pesticides, or to combined exposure to pesticides and other toxins?

One of the goals of the pilot projects is to assess the cumulative effects of these kinds of exposures.

U.S. EPA has developed methods to address some risks from exposure to multiple pesticides. These and other methods will be used to try to evaluate multiple pesticide exposure, as well as the pesticide-by-pesticide evaluation.

DPR will also assemble other available data on pesticides in other environmental sources (for example, water and food), and data on other pollutants. It will be used in an analysis of cumulative impacts according to guidance being developed for all Cal/EPA pilot projects by Cal/EPA's Office of Environmental Health Hazard Assessment.

Where can I get more information?

For more information on the project, go to DPR's Web site, www.cdpr.ca.gov, and click on Environmental Justice in the right-hand column, then on Pilot Project.

For more technical and scientific details about the project, you can download the project protocol by clicking on Pilot Project, then Protocol. (In any scientific study, objectives and methods must be clearly thought through and described. A protocol is the formal design or plan of the research, including the objectives, how the study was designed, and how the data will be collected, analyzed, and evaluated.) You can also have a printed copy mailed to you by calling Randy Segawa at DPR, 916/324-4137, or emailing him at rsegawa@cdpr.ca.gov.

While you are on our Web site, you can also browse our pages for more information on other DPR air monitoring projects.

For more information on pesticides in general, you can call U.S. EPA's National Pesticide Information Center, 1-800-858 7378, or visit the center's Web site, <npic.orst.edu>.

Go to www.cdpr.ca.gov for more details. Click on "Environmental Justice," then "Pilot Project."

Department of Pesticide Regulation
1001 I Street
P.O. Box 4015
Sacramento, CA 95812

www.cdpr.ca.gov
916.445.4300

ABOUT THE DEPARTMENT OF PESTICIDE REGULATION

The California Department of Pesticide Regulation (DPR) protects human health and the environment by regulating pesticide sales and use and by fostering reduced-risk pest management. DPR's strict oversight includes product evaluation and registration, environmental monitoring, residue testing of fresh produce, and local use enforcement through the county agricultural commissioners. DPR is one of six boards and departments within the California Environmental Protection Agency.